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(54) Title: WHIPPED TOPPING

(57) Abstract

Whipped food products having enhanced temperature stability and good organoleptic properties are described. The whipped food products, which can be maintained at room temperature, freezer or refrigerator temperature for an extended period of time, are prepared by blending a temperature stabilizing effective amount of non–tropical lauric oil with the other ingredients of the whipped product. The non–tropical lauric oil contains at least about 30 % lauric acid in its triglycerie molecule.

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WHIPPED TOPPING

Field of the Invention

This invention is directed to food products, such as whipped food toppings, bakery fillings and frostings which contain no, or a reduced amount of, non-tropical oil and which have desirable organoleptic characteristics. In particular, the invention is directed to whipped food products containing non-tropical oil having a high content of lauric acid and which exhibit enhanced stability at high temperature.

Background of the Invention

There is a recognized and unmet need for food toppings, such as whipped toppings, bakery fillings, icings and frostings in which the topping is stable at both refrigerator and high (85° F) temperature and which contains little or no tropical oil, but which has the mouth-feel characteristics of tropical oil-containing toppings. Consumer demand is high for products that are low in saturated fats, while at the same time demand for food toppings that exhibit fresh cream-type taste and rich creamy appearance is high.

Consumer acceptance of food toppings depends, in part, upon the lack of perception by the consumer of a lingering or waxy taste associated with the presence of a significant percentage of high temperature melting triglyceride fats. Other factors that affect consumer acceptance of such products include the performance and quality of the products. Factors including, for example,

cracking, wilting, weeping or hardening of confections, the absence of off-flavors or odors associated with many vegetable oils and temperature stability.

Tropical oils, such as coconut oil and palm kernel oil, which contain predominantly C_{12} (lauric acid) to C_{14} (myristic acid) fatty acids in the triglyceride molecule have routinely been used in such products because these fatty acids impart desired organoleptic properties to food and provide performance characteristics required of such products, e.g., stability at both refrigerated (about 38-40°F) and high (about 75 -85°C) temperatures when whipped. Tropical oils are particularly desirable because of the creamy texture and taste imparted by the medium chain fatty acids contained therein. However, tropical oils are highly saturated and as such, are considered to be unhealthy or, at least, less healthy than unsaturated or less saturated oils.

Domestic oils or temperate latitude oils have been used in place of tropical oils in many food topping products. These oils include, for example, soybean oil, canola oil (low erucic acid rapeseed), rapeseed oil, sunflower oil, corn oil, cottonseed oil, peanut oil, safflower oil and olive oil. The domestic oils are characterized as generally containing no more than about 5% of fatty acids that are of C_{14} length or less, no more than about 15% of C_{16} length fatty acid, and more than about 50% total of C_{18} (saturated, mono-, di and tri-unsaturated) fatty acids. However, these oils require substantial hydrogenation when used in whipped toppings and other food toppings. In this regard, it is generally recognized that domestic oils must be hydrogenated to a resultant iodine value of about 65 to about 75 in order to be useful in food toppings such as whipped toppings, bakery fillings, icings, frostings and the like. Without extensive hydrogenation these oils do not provide either adequate temperature stability or whippability properties, highly desired features of food toppings. When appropriately hydrogenated to provide the desired whippability properties, however, they also contribute

to undesirable performance or consumer appeal characteristics, such as waxy mouth feel, poor getaway, etc.

Accordingly, there is a need for non-dairy whipped food products containing a triglyceride fat component that is less saturated than tropical oils, but which provides the organoleptic characteristics of tropical oils and which also provides enhanced temperature stability at high temperature and good shelf performance when whipped. These and other benefits are provided by the food topping of the present invention.

Summary of the Invention

In one aspect of the present invention there is provided whipped food products having improved whipping characteristics and which contain little or no tropical oil. The whipped food products comprise a temperature stabilizing effective amount of a non-tropical lauric oil having a triglyceride oil comprising at least about 30% lauric acid on the basis of the total triglyceride content of the lauric oil. In preferred embodiments the whipped food product is a whipped topping or bakery filling or a frosting or icing. In a most preferred embodiment of the invention the whipped food product comprises an oil having a genetically modified fatty acid profile wherein the ratio of C_{12} fatty acid to other fatty acids is increased. Most preferably, the genetically modified oil is a canola oil. In another preferred embodiment of the invention, the whipped food product comprises a combination of a non-tropical lauric oil and a tropical oil.

In another aspect of the invention, there is provided a whipped food topping comprising about 10% to about 70% water; from about 5% to about 36% non-tropical lauric oil; about 0.2% to about 60% sugar and about 0.2% to about 10% of a compound selected from the group consisting of salt, stabilizer, protein, emulsifier, flavoring and combinations thereof.

Detailed Description of the Invention

The present invention is directed to whipped food products that have excellent organoleptic characteristics and which exhibit good shelf performance at refrigerator, freezer or ambient temperature and good physical stability to weeping, crazing, bleeding, cracking, sliding or melting off, for example. The term "whipped food product" is used herein to mean a non-dairy whipped confection, such as for example, frosting, icing, bakery filling, non-dairy whipped topping and the like.

The whipped food products of this invention are characterized by their temperature stability and organoleptic properties. These characteristics are achieved by blending a temperature-stabilizing amount of non-tropical lauric oil(s) with the non-fat containing ingredients of the whipped food product and optionally, with a tropical oil component, and whipping the ingredients to the desired volume. By "temperature-stabilizing effective amount" is meant an amount of non-tropical lauric oil necessary to achieve a temperature stability profile similar to or better than that achieved when the triglyceride component of the whipped product is derived solely from tropical oil. For example, when a non-tropical lauric oil is blended with other conventional frosting or icing ingredients according to the practice of this invention, the resulting whipped form of frosting or icing exhibits superior stability at both high temperature and refrigerator temperature.

The whipped food products of this invention contain a triglyceride fat component that is provided from a non-tropical lauric oil, i.e., a domestic or temperate latitude oil having a lauric acid content of at least about 30% on the basis of the total triglyceride content of the oil. According to the practice of the invention, the non-tropical lauric oil is preferably at least partly unsaturated and the triglyceride molecule thereof contains a majority of C12 to C18 fatty acids on the basis of total weight of the triglyceride. Preferably, the non-tropical oil is a modified non-tropical oil, such as rapeseed oil or low

erucic acid rapeseed oil (canola oil) that has been genetically modified to have a substantially high lauric acid content. However, any genetically modified unsaturated or partially unsaturated non-tropical oil having a lauric acid content of at least about 30% may be used in the present whipped food products. A particularly preferred modified oil useful in the present whipped food products is Laurical™, a genetically modified canola oil having a laurate content of at least 30% and which is commercially available from Calgene Corp., Davis, CA.

The non-tropical lauric oil used in the whipped food products of this invention may be hydrogenated, partially hydrogenated or nonhydrogenated. When non-hydrogenated, the refined, bleached and deodorized non-tropical lauric oil has an iodine value of about 60 to about 75, preferably from about 60 to about 70 and most preferably, from about 60 to about 65. When partially hydrogenated non-tropical lauric oil is included in the whipped food products of the invention it has an iodine value of from about 15 to about 45, preferably from about 22 to about 28, most preferably from about 23 to about 27. The whipped food products of the invention may contain a combination of various non-tropical lauric oils having different degrees of hydrogenation, for example.

The lauric acid content of the non-tropical lauric oil used in the present whipped food products is at least 30% and preferably, at least about 32% to about 42%. In a most preferred embodiment of the invention, the myristic acid content of the non-tropical lauric oil is in the range of from about 3% to about 5%, preferably from about 3.5% to about 4%.

In a preferred embodiment of the invention, the saturated fat content of the non-tropical lauric oil used in the whipped food products of the invention is in the range of from about 40% to about 90% on the basis of the total fat content of the non-tropical lauric oil. The total monounsaturated fat content

of the non-tropical lauric oil is preferably in the range of from about 12% to about 40% and the total polyunsaturated fat content of the non-tropical lauric oil is about 0.2% to about 5%.

In one embodiment of the invention, there is provided a frosting or icing containing a non-tropical lauric oil blended with a tropical oil, such as palm kernel oil or hydrogenated coconut oil, and other conventional ingredients to form a frosting or icing. The resulting frosting or icing exhibits good stability at refrigerator temperature, e.g., comparable to that of the same frosting or icing prepared with tropical oil alone. However, the frosting or icing prepared according to the invention exhibits significantly better stability at high temperature compared to an icing or frosting prepared with tropical oil alone.

The whipped food products of the present invention are prepared by any known method of mixing whipped products. The principals and techniques which have been developed in the food industry for preparation of whipped food products are applicable to the present invention.

The whipped food products according to the invention include microbiologically stable oil-in-water products, such as whipped toppings, frostings, icing, bakery fillings, etc. which contain from about 3% to about 35% fat, of which at least about 30% is obtained from a non-tropical laurate oil; from about 10% to about 75% water; preferably 25 to 70%; from about 0.2 to about 60% sweetener, such as any of a number of useful powdered or granular saccharide materials or sugar syrup, e.g., high fructose corn syrup, sucrose, powdered 6X sugar, sucrose-dextrose syrup, and the like; and minor but effective amounts, e.g., from about 0.2 to about 3% total of protein, such as soy protein concentrate (PROCON 2000; available from Central Soya Co., Inc. Fort Wayne, IN), emulsifier, salt, stabilizer, flavoring, food coloring or combinations thereof. The foregoing ingredients are adapted to provide a

product which will flow or spread at about 10°F. These products have excellent organoleptic properties and texture and are readily whipped to a high volume with a light but firm structure. In addition to microbiological stability these products have physical stability and retain a smooth foamed cellular structure without separation of a liquid portion. The products are further characterized by having an overrun of greater than 150%, preferably from about 150% to about 300%, and a density as low as about 0.3 for a frosting or whipped topping.

At least one emulsifier is included in the products of the invention that are oil-in-water emulsions. Any of a wide variety of emulsifiers may be used in amounts generally in the range of from about 0.1% to about 5%, preferably about 0.2% to about 1.5%. Emulsifiers induce the formation of a stable emulsion and improve the rate of and total aeration obtained upon whipping. Among the more suitable emulsifiers are lecithin (such as CENTROL® 3F UB from Central Soya, Fort Wayne, IN), mono- and diglycerides, polyglycerol esters of mono- and diglycerides such as hexaglyceryl distearate (6-2-S, available from Lonza Specialty Chemicals, Fair Lawn, NJ, under the trademark POLYALDO® HGDS), polyoxyethylene ethers of fatty esters of polyhydric alcohols such as polyoxyethylene sorbitan monostearate (available from Lonza Specialty Chemicals, Fair Lawn, NJ, under the trademark GLYCOSPERSE® S-20), organic acid esters of mono- and diglycerides, sucrose esters of fatty acids, and the like.

The emulsion compositions of the present invention also include hydrostabilizers or hydrophilic colloids to improve the body and texture of toppings, and as an aid in providing freeze-thaw stability. These stabilizers are natural, i.e., vegetable or synthetic gums and may be, for example, Carageenan, guar gum, alginate, xanthan gum, Hydroxypropyl Methylcellulose (such as METHOCEL® F50 from Dow Chemical Co., Midland, MI), carboxymethyl ethylcellulose, micro-crystalline cellulose, and

the like and mixtures thereof. The amount of the stabilizer may be varied widely in accordance with the amount required, generally about from 0% to about 2%, preferably from about 0.1% to about 0.5%.

Protein concentrates and isolates are useful to improve the nutritional qualities of the product and to facilitate and maintain a whipped structure. Protein also aids in emulsification and flavor. Bland protein concentrates having a wide range of fiber content, milk powder, soy flour, sodium caseinate and the like may be included, generally in the range of from about 0% to about 10%, preferably from about 0.3% to about 3%.

Many types of salts may be used in the food products of the invention for flavoring and/or stabilization, including sodium chloride, sodium or potassium citrates, phosphates, chlorides and the like, in an amount of about from 0% to about 5%, but preferably from about 0.1% to about 1%.

Food grade acidulents such as phosphoric, tartaric, malic, citric, fumaric, hydrochloric and the like edible food acids are suitable to impart tartness, control pH or serve as preservative.

Flavorings useful in the whipped food products of the invention include any of the conventional flavorings, such as vanilla, artificial vanilla, rosemary extract such as HERBALOX® (available from Kalsec, Inc., Kalamazoo, MI), natural cream flavor and artificial cream flavor (Flavor Cream N & A), and the like.

Food colorants may also be included in the whipped food products of the invention. A preferred food colorant of the invention is Vegetone® Regular, a colorant extracted from annatto seeds and tumeric rhizomes, and available from Kalsec Inc., Kalamazoo, MI.

The foregoing conventional ingredients are used in their normal amounts and may vary from the representative amounts and ranges provided herein. The following examples are not intended to be limiting, but rather illustrative of some food products made in accordance with the present invention, which may be varied in accordance with the spirit and scope of this description.

EXAMPLE 1 - Preparation of Whipped Topping

A non-dairy whippable food topping containing the ingredients listed in Table 1 was prepared as follows:

Three (3) 10,000 gram batches (one control and two treatments) of whipped topping of the present invention were prepared in accordance with the following procedure. Ingredients 7 to 11 were premixed. Ingredient 1 (water) was added to a pasteurizer, (GROEN® kettle with air actuator, Arrow Engineering, Hillside, NJ) and heated to 170°F. Agitation was started. Ingredient 6 (HERBALOX®) was added. Premixed ingredients 7 to 11 were added to the batch and allowed to properly hydrate. Ingredient 12 (Polysorbate 60) was added. Ingredients 13 (cold water) and 14 (HFCS) were simultaneously added and the mix cooled to below 130°F. Ingredient 15 (4% Methocel® Solution) was added, allowing for at least one minute mixing time. Agitation was stopped and ingredients 2 and 3, or 4 and 5 (corresponding oil treatment) at 130°F were added to the batch. Ingredients 16 (Lecithin) and 17 (VEGETONE®) were mixed together in a small amount of the corresponding oil and added to the batch. Agitation was restarted and the mixture was heated to 120°F and allowed to mix for at least five minutes. Ingredients 18, 19 and 20 (Flavors) were added, and the mixture was two-step homogenized at 500/3000 psi total pressure. The homogenized mixture was cooled down to 40°F to 44°F. The treatments were evaluated and compared for the following characteristics after a freeze/thaw cycle: viscosity,

whipping time, % overrun, foam strength, bowl stability and cake stability, using standard methodologies. The results are shown in Table 2.

TABLE 1

Ingredient	Control	Laurical™* 25	Laurical™ 35	Control	Laurical™ 25	Laurical™ 35
	%	%	%	g	g	g
1. Water	17.70	17.70	17.70	1770.49	1770.49	1770.49
2. PKO	9.36	0.00	0.00	935.68	0.00	0.00
3. HCO	13.88	0.00	0.00	1388.43	0.00	0.00
4. Laurical™ 25	0.00	23.24	0.00	0.00	2324.11	0.00
5. Laurical™ 35	0.00	0.00	23.24	0.00	0.00	2324.11
6. Herbalox®	0.004	0.004	0.004	0.40	0.40	0.40
7. Sugar	0.19	0.19	0.19	19.00	19.00	19.00
8. 6-2-S	0.13	0.13	0.13	13.00	13.00	13.00
9. Salt	0.12	0.12	0.12	12.00	12.00	12.00
10. Sodium Alginate	0.05	0.05	0.05	5.00	5.00	5.00
11. Sodium Citrate	0.01	0.01	0.01	1.00	1.00	1.00
12. Poly 60	0.16	0.16	0.16	16.10	16.10	16.10
13. Water	26.64	26.64	26.64	2663.66	2663.66	2663.66
14. HFCS	24.18	24.18	24.18	2418.37	2418.37	2418.37
15. 4% Metho-cel® Soln	7.53	7.53	7.53	752.57	752.57	752.57
16. Lecithin	0.03	0.03	0.03	3.02	3.02	3.02
17. Clear Vegetone R	0.002	0.002	0.002	0.20	0.20	0.20
18. Vanilla Art.	0.01	0.01	0.01	1.00	1.00	1.00
19. Art. Cream Flavor	0.0004	0.0004	0.0004	0.04	0.04	0.04
20.Cream Flavor (N&A)	0.0004	0.0004	0.0004	0.04	0.04	0.04
TOTAL	100.0	100.0	100.0	10000.0	10000.0	10000.0

*Laurical™ 25 and Laurical™ 35 differ in the solid fat content at various temperatures as well as in their fatty acid profiles.

TABLE 2

Property	Control	Laurical™ 25	Laurical™ 35
VISCOSITY cp/temp	108 cp / 44° F	98 cp / 44°F	92 cp / 44° F
WHIPPING TIME minutes / whipping temperature	6.08 min / 48° F	10 min / 48° F	5.77 min / 48° F
FINAL WHIPPING % overrun / temperature	360 / 57° F	374 / 61° F	320 / 57° F
BOWL FOAM STRENGTH (g) max. compression force / max. pull force 1 day 4 days Differential (day 1 - day 4)	 73.3g / 45.9g 57.6g / 38.2g 18.7g / 7.8g	 73.8g / 44.4g 69.6g / 39.6g 4.2g / 4.8g	 100.2g / 59.3g 89.8g / 59.8g 10.4g / 0.0g
REFRIGERATED STABILITY Bowl Cake	Liquid Separation Cracking	Liquid Separation O.K.	Liquid Separation Cracking

Evaluation of the above samples indicated that the performance of Laurical™ 25 and Laurical™ 35 in the whipped topping is similar to that of the control, which contained a blend of hydrogenated coconut oil and palm kernel oil.

EXAMPLE 2 - Preparation of Whipped Frosting

A whipped frosting containing the ingredients listed in Table 3 was prepared as follows:

Three (3) 25,000 gram batches (one control and two treatments) of whipped frosting of the present invention were prepared in accordance with the following procedure. Ingredients 7 (sugar), 11 (sodium caseinate), 14 (xanthan gum), 15 (METHOCEL® F50), 16 (PROCON® 2000), and 19

(powdered vanilla flavor) were premixed. Ingredients 2, 3 and 5, or 4 (corresponding oil treatment) at 130°F were added to a pasteurizer, (GROEN® kettle with air actuator, Arrow Engineering, Hillside, NJ). Ingredient 6 (Lecithin) was mixed with a small amount of the corresponding oil and added to the batch. Agitation was started. Ingredient 10 (potassium sorbate) was added to the batch. Premixed ingredients 7, 11, 14, 15, 16 and 19 were added to the batch and allowed to properly disperse. Ingredient 1 (water) at 160°F was added to the batch while mixing at high speed. Heating was started. Ingredient 13 (HFCS) was added. Ingredients 9 (salt), 17 (polysorbate 60), and 8 (6-2-S) were added. The mixture was heated to 165°F and allowed to mix for at least 5 minutes. Ingredient 18 (vanilla flavors) was added, and the mixture was two-step homogenized at 500/3000 psi total pressure. The homogenized mixture was cooled down to 47°F to 51°F. The treatments were evaluated and compared for the following characteristics after a freeze/thaw cycle: viscosity, whipping time, % overrun, foam strength, bowl stability and cake stability, using standard methodologies. The results are shown in Table 4.

TABLE 3

Ingredient	Control	Laurical™ 15/35	Laurical™ 25	Control	Laurical™ 15/35	Laurical™ 25
	%	%	%	g	g	g
1. Water	20.3	20.3	20.30	5081 .3	5081.3	5081.3
2. PKO	24.2	0.0	0.0	6057.5	0.0	0.0
3. Laurical™ 15	0.0	12.1	0.0	0.0	3025.0	0.0
4. Laurical™ 25	0.0	0.0	24.2	0.0	0.0	6057.5
5. Laurical™ 35	0.0	12.1	0.0	0.0	3025.0	0.0
6. Lecithin	0.1	0.1	0.1	25.0	25.0	25.0
7. Sugar	0.16	0.16	0.16	40.0	40.0	40.0
8. 6-2-S	0.1	0.1	0.1	25.0	25.0	25.0
9. Salt	0.14	0.14	0.14	35.0	35.0	35.0
10. K Sorbate	0.1	0.1	0.1	25.0	25.0	25.0
11. Sodium Caseinate	1.25	1.25	1.25	312.5	312.5	312.5
12. Poly 60	0.1	0.1	0.1	35.0	35.0	35.0
13. HFCS	52.0	52.0	52.0	12998.8	12998.8	12998.8
14. Xanthan	0.04	0.04	0.04	10.0	10.0	10.0
15. Methocel F50	0.26	0.26	0.26	65.0	65.0	65.0
16. Procon 2000	0.42	0.42	0.42	105.0	105.5	105.5
17. Poly 60	0.28	0.28	0.28	70.0	70.0	70.0
18. Art Van	0.5	0.5	0.5	125.0	125.0	125.0
19. Powdered Vanilla	0.1	0.1	0.1	25.0	25.0	25.0
TOTAL						
	100.0	**100.0**	**100.0**	**25000.0**	**25000.0**	**25000.0**

TABLE 4

PROPERTY	CONTROL	LAURICAL™15/35	LAURICAL™25
VISCOSITY cp / temperature	655 / 52° F	939 / 40.6° F	715 / 46.6° F
WHIPPING TIME minutes / whipping temp.	4.02 min / 48° F	4.33 min /48.3° F	4.33 min /48° F
% OVERRUN / FINAL WHIPPING TEMPERATURE	332 / 56° F	317 / 60° F	327/ 59° F
FOAM STRENGTH (g) max. compression force / max. pull force	88.63 / 59.7	79.8 / 53.6	70.5 / 46.4
14 DAY BOWL STABILITY refrigerated (38°F - 40°F)	smooth	some cracks - OK	some cracks - OK
14 DAY CAKE STABILITY			
38°- 40°F refrigerated	smooth /no cracks	some cracks	some cracks
72°F room temp	smooth /no cracks	smooth / no cracks	smooth / no cracks
85°F	total collapse and cracking	smooth / no cracks	smooth / no cracks

Evaluation of the above frostings for stability after 14 days – demonstrated that the frostings prepared with Laurical™ oils were stable at both room temperature and 85°F for 14 days without cracking or collapsing. The texture of the icing remained smooth throughout the 14 day trial. The control (tropical oil only) totally collapsed and cracked after 14 days at 85°F.

EXAMPLE 3 - Preparation of Whipped Frosting

A frosting containing a blend of palm kernel oil and Laurate Canola oil containing the ingredients listed in Table 5 was made as follows.

TABLE 5

INGREDIENT	Control 1 %	Control 2 %	PKO/15 %	Control 1 g	Control 2 g	PKO/15 g
1. PKO	24.23	0.00	14.54	2423.0	0.0	1453.8
2. Modified PKO	0.00	24.23	0.00	0.0	2423.0	0.0
3. Laurical™ 15	0.00	0.00	9.69	0.0	0.0	969.2
4. Lecithin	0.10	0.10	0.10	10.0	10.0	10.0
5. K-Sorbate	0.10	0.10	0.10	10.0	10.0	10.0
6. Sodium Caseinate	1.25	1.25	1.25	125.0	125.0	125.0
7. Sugar	0.16	0.16	0.16	16.0	16.0	16.0
8. Xanthan	0.04	0.04	0.04	4.0	4.0	4.0
9. Pwd Van (2916)	0.10	0.10	0.10	10.0	10.0	10.0
10. Procon 2000	0.42	0.42	0.42	42.0	42.0	42.0
11. Methocel F50	0.26	0.26	0.26	26.0	26.0	26.0
12. Water	20.33	20.81	20.33	2032.5	2080.9	2032.5
13. HFCS	52.00	52.00	52.00	5199.5	5199.5	5199.5
14. Salt	0.14	0.14	0.14	14.0	14.0	14.0
15. Poly 60	0.28	0.28	0.28	28.0	28.0	28.0
16. 6-2-S	0.10	0.10	0.10	10.0	10.0	10.0
17. Van Art (1316)	0.50	0.02	0.50	50.0	1.6	50.0
TOTAL						
	100.00	**100.00**	**100.00**	**10000.0**	**10000.0**	**10000.0**

Three (3) 10,000 gram batches (one control and two treatments) of whipped frosting of the present invention were prepared in accordance with the following procedure. Ingredients 6 (sodium caseinate), 7 (sugar), 8 (xanthan gum), 9 (powder vanilla flavor), 10 (PROCON® 2000) and 11 (METHOCEL ® F50) were premixed. Ingredients 1, 2 or 1 and 3 (corresponding oil treatment) at 130°F were added to a pasteurizer (GROEN® kettle with air actuator, Arrow Engineering, Hillside, NJ). Ingredient 4 (lecithin) was mixed with a small amount of the corresponding oil and added to the batch. Agitation was started. Ingredient 5 (potassium sorbate) was added to the batch. Premixed ingredients, 6, 7, 8, 9, 10 and 11 were added to the batch and allowed to properly disperse. Water (1) at 160°F was added to the batch while mixing at high speed. Heating was started. Ingredient 13 (HFCS) was added. Ingredients 14 (salt), 15 (polysorbate 60), and 16 (6-2-S) were added. The mixture was heated to 165°F and allowed to mix for at least 5 minutes. Ingredient 17 (vanilla flavor) was added, and the mixture was two-step homogenized at 500/3000 psi total pressure. The homogenized mixture was cooled down to 47°F to 51°F. The treatments were evaluated and compared for the following characteristics after a freeze/thaw cycle: viscosity, whipping time, percent overrun, foam strength, bowl stability and cake stability, using standard methodologies. The results are shown in Table 6.

TABLE 6

PROPERTY	Control (PW Bettr)	Control (Supremo)	PKO/Laurical™15
VISCOSITY cp	1060	890	1500
WHIPPING TIME minutes/seconds	4 minutes, 9 seconds	5 minutes, 7 seconds	5 minutes, 15 seconds
% OVERRUN	335	353	332
FOAM STRENGTH (g) (max. Compression force / max. Pull force)	161.9g / 101.5g	117.2g / 74.9g	113.9g / 72.6g
STABILITY			
Bowl : 2 weeks, 40°F	Good	Good	Good
Cake :			
Refrigerated - 40°F	Good	Good	Good
Room Temp - 72°F	Good	Good	Good
High Temp - 80°F	Collapsed	Collapsed	Good

After two weeks at 80° F, the frosting containing a blend of palm kernel oil and laurate canola oil was smooth and did not collapse. The frostings prepared with palm kernel oil alone did not perform as well as the blend at 80° F. All three frostings performed equally well at room temperature and at refrigerated temperatures.

What is claimed is:

Claim 1. A whipped food product comprising a temperature stabilizing effective amount of a non-tropical lauric oil having a triglyceride component comprising at least about 30% lauric acid on the basis of the total triglyceride content of the lauric oil.

Claim 2. The whipped food topping according to claim 1 wherein the majority of fatty acids in the triglyceride component are C_{12} to C_{18} fatty acids.

Claim 3. The whipped food product according to claim 1 wherein said food product is a whipped topping or bakery filling.

Claim 4. The whipped food product according to claim 1 wherein the food product is a frosting or icing.

Claim 5. The whipped food product of claim 4 wherein the frosting or icing further comprises a tropical oil.

Claim 6. The frosting or icing of claim 5 wherein the ratio of non-tropical lauric oil to tropical oil in said icing or frosting is from about 1:3 to about 1:1.

Claim 7. The whipped food product according to claim 1 wherein the non-tropical lauric oil has an iodine value of from 60 to about 75.

Claim 8. The whipped food product of claim 1 wherein the non-tropical lauric oil has an iodine value of from about 15 to about 45.

Claim 9. The whipped food product of claim 1 wherein the content of lauric acid in the non-tropical lauric oil is from about 32% to about 42%.

Claim 10. The whipped food product according to claim 1 wherein the non-tropical lauric oil has a myristic acid content of about 3% to about 5% based on the total weight of the non-tropical oil.

Claim 11. The whipped food product according to claim 1 wherein the total monounsaturated fat content of the non-tropical lauric oil is in the range of from about 12% to about 40%.

Claim 12. The whipped food product according to claim 1 wherein the total polyunsaturated fat content of the non-tropical lauric oil is in the range of from about 0.2% to about 5%.

Claim 13. The whipped food product of claim 1 wherein the temperature stabilizing effective amount of the non-tropical lauric oil is in the range of from about 5% to about 36% based on the total weight of the whipped food product.

Claim 14. The whipped food product of claim 1 wherein the food product is an oil-in-water emulsion.

Claim 15. The whipped food product according to claim 14 further comprising an emulsifier.

Claim 16. The whipped food product of claim 1 wherein the non-tropical lauric oil is a genetically modified oil.

Claim 17. The whipped food product of claim 1 wherein the non-tropical lauric oil is a genetically modified canola oil.

Claim 18. A whipped food product comprising about 25% to about 70% water, about 5% to about 36% non-tropical lauric oil, about 0.2% to about 60% sweetener and about 0.2% to about10% of salt, stabilizer, protein, emulsifier, flavoring, food color or a combination thereof.

Claim 19. The whipped food product of claim 18 wherein the whipped topping comprises an effective amount of an emulsifier.

Claim 20. A whipped food product of claim 18 wherein the whipped topping comprises about 0.2 to about 3% of salt, stabilizer, protein, emulsifier, flavoring, food color or a combination thereof.

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 426/564,565,566,570,571,572

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,102,680 A (GLASS ET AL) 07 April 1992 (07-04-92), see entire document.	1-20
Y	US 5,587,195 A (SASSEN) 24 December 1996 (24-12-96), see entire document.	1-20
A	US 5,374,438 A (YOST) 20 December 1994 (20-12-94), see entire document.	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
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